

SEQUENCE LISTING

<110> Hurst, Deborah
 Long, Li
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 Yabannavar, Asha
 Zaror, Isabel

<120> Methods of Therapy for Cancers
 Expressing the CD40 Antigen

<130> PP23220.001 (281250)

<150> 60/565,710
 <151> 2004-04-27

<150> 60/525,579
 <151> 2003-11-26

<150> 60/517,337
 <151> 2003-11-04

<160> 18

<170> FastSEQ for Windows Version 4.0

<210> 1
 <211> 720
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Coding sequence for light chain of CHIR-12.12
 human anti-CD40 antibody

<221> CDS
 <222> (1)...(720)

<400> 1
 atg gcg ctc cct gct cag ctc ctg ggg ctg cta atg ctc tgg gtc tct 48
 Met Ala Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Ser
 1 5 10 15

gga tcc agt ggg gat att gtg atg act cag tct cca ctc tcc ctg acc 96
 Gly Ser Ser Gly Asp Ile Val Met Thr Gln Ser Pro Leu Ser Leu Thr
 20 25 30

gtc acc cct gga gag ccg gcc tcc atc tcc tgc agg tcc agt cag agc 144
 Val Thr Pro Gly Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser
 35 40 45

ctc ctg tat agt aat gga tac aac tat ttg gat tgg tac ctg cag aag 192
 Leu Leu Tyr Ser Asn Gly Tyr Asn Tyr Leu Asp Trp Tyr Leu Gln Lys
 50 55 60

cca ggg cag tct cca cag gtc ctg atc tct ttg ggt tct aat cgg gcc 240
 Pro Gly Gln Ser Pro Gln Val Leu Ile Ser Leu Gly Ser Asn Arg Ala
 65 70 75 80

tcc ggg gtc cct gac agg ttc agt ggc agt gga tca ggc aca gat ttt 288
 Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe
 85 90 95

aca ctg aaa atc agc aga gtg gag gct gag gat gtt ggg gtt tat tac	336
Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr	
100	105
110	
 tgc atg caa gct cga caa act cca ttc act ttc ggc cct ggg acc aaa	384
Cys Met Gln Ala Arg Gln Thr Pro Phe Thr Phe Gly Pro Gly Thr Lys	
115	120
125	
 gtg gat atc aga cga act gtg gct gca cca tct gtc ttc atc ttc ccg	432
Val Asp Ile Arg Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro	
130	135
140	
 cca tct gat gag cag ttg aaa tct gga act gcc tct gtt gtg tgc ctg	480
Pro Ser Asp Glu Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu	
145	150
155	160
 ctg aat aac ttc tat ccc aga gag gcc aaa gta cag tgg aag gtg gat	528
Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp	
165	170
175	
 aac gcc ctc caa tcg ggt aac tcc cag gag agt gtc aca gag cag gac	576
Asn Ala Leu Gln Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp	
180	185
190	
 agc aag gac agc acc tac agc ctc agc agc acc ctg acg ctg agc aaa	624
Ser Lys Asp Ser Thr Tyr Ser Leu Ser Thr Leu Thr Leu Ser Lys	
195	200
205	
 gca gac tac gag aaa cac aaa gtc tac gcc tgc gaa gtc acc cat cag	672
Ala Asp Tyr Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln	
210	215
220	
 ggc ctg agc tcg ccc gtc aca aag agc ttc aac agg gga gag tgt tag	720
Gly Leu Ser Ser Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys *	
225	230
235	

<210> 2
<211> 239
<212> PRT
<213> Artificial Sequence

<220>
<223> Light chain of CHIR-12.12 human anti-CD40 antibody

<400> 2
Met Ala Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Ser
1 5 10 15
Gly Ser Ser Gly Asp Ile Val Met Thr Gln Ser Pro Leu Ser Leu Thr
20 25 30
Val Thr Pro Gly Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser
35 40 45
Leu Leu Tyr Ser Asn Gly Tyr Asn Tyr Leu Asp Trp Tyr Leu Gln Lys
50 55 60
Pro Gly Gln Ser Pro Gln Val Leu Ile Ser Leu Gly Ser Asn Arg Ala
65 70 75 80
Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe
85 90 95
Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr
100 105 110
Cys Met Gln Ala Arg Gln Thr Pro Phe Thr Phe Gly Pro Gly Thr Lys
115 120 125
Val Asp Ile Arg Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro
130 135 140
Pro Ser Asp Glu Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu

145	150	155	160
Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp			
165	170	175	
Asn Ala Leu Gln Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp			
180	185	190	
Ser Lys Asp Ser Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys			
195	200	205	
Ala Asp Tyr Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln			
210	215	220	
Gly Leu Ser Ser Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys			
225	230	235	

<210> 3
<211> 2016
<212> DNA
<213> Artificial Sequence

<220>
<223> Coding sequence for heavy chain of CHIR-12.12
human anti-CD40 antibody (with introns)

<400> 3
atggagtttg ggctgagctg ggtttcctt gttgtattta taagagggtgt ccagtgtcag 60
gtgcagttgg tggagtcgg gggaggcggt gtccagcctg ggaggccct gagactctcc 120
tgtcagccct ctggattcac cttcagtagc tatggcatgc actgggtccg ccaggctcca 180
ggcaaggggc tggagttgggt ggcagttata tcataatgagg aaagtaataag ataccatgca 240
gactccgtga agggccgatt caccatctcc agagacaatt ccaagatcac gctgtatctg 300
caaataatgaa gcctcagaac tgaggacacg gctgtgtatt actgtgcgag agatgggggt 360
atagcagcac ctggcgtga ctactggggc caggaaaccc tggtcaacgt ctccctcagca 420
agtaccaagg gccccatccgt cttcccccgt ggcggcccta gcaagagcac ctctggggc 480
acagcggccc tgggctgcct ggtaaggac tacttccccc aaccgggtgac ggtgtcgtgg 540
aactcaggcg ccctgaccag cggcgtgcac accttccccc ctgtccctaca gtccctcagga 600
ctctactccc tcagcagcgt ggtgaccgtg ccctccagca gcttggcaca ccagacctac 660
atctgcaacg tgaatcacaa gcccagcaac accaagggtgg acaagagagt tggtgagagg 720
ccagcacagg gagggggggt gtctgtgg agccaggctc agcgcctctg cctggacgc 780
tcccggttat gcagtcggc tccaggcgag caaggcggc cccgtctgcc tcttcacccg 840
gaggcctctg cccgccccac tcatagtctcgtc gggagggtt ttctggctt ttcccccaggc 900
tctggcagg cacaggctag gtggccctaa cccaggccct gcacacaaag gggcagggtc 960
tgggctcaga cctgccaaga gcccataatccg ggaggaccct gcccctgacc taagcccacc 1020
ccaaaggcca aactctccac tccctcagct cggacaccctt ctctccccc agattccagt 1080
aactcccaat ctctctctg cagagcccaa atcttgcgtac aaaactccaca catgcccacc 1140
gtgcccagggt aagccagccc aggccctcgc ctccagctca aggccggaca ggtgccttag 1200
atgagcctgc atccaggagc aggccccaggc cgggtctgtc cacgtccacc tccatctctt 1260
cctcagcacc tgaactcctg gggggaccgt cagttccctt cttcccccataa aaaaaaagg 1320
acaccctcat gatctcccg acccctgagg tcacatgcgt ggtggtgac gtgagccacg 1380
aagaccctga ggtcaagttc aactggtagc tggacggcgt ggaggtgcat aatgccaaga 1440
caaagcccgcc ggaggagcag tacaacagca cgtaccgtgt ggtcagcgcc ctcaccgtcc 1500
tgcaccagga ctggctgaat ggcaaggagt acaagtgcac ggtctccaaac aaagccctcc 1560
cagccccatc cgagaaaaacc atctccaaag ccaagggtgg gacccgtgg gtgcgagggc 1620
cacatggaca gaggccggct cggccccccc tctggccctga gagtggccgc tgtaccaacc 1680
tctgtccctca cagggcagcc cccgagaacca caggtgtaca ccctggccccc atcccgggag 1740
gagatgacca agaaccagggt cagccctgacc tgcctggtca aaggcttcta tccacgcac 1800
atcgccgtgg agtgggagag caatgggcag ccggagaaca actacaagac cacgcctccc 1860
gtgctggact ccgacggttc ctcttcctc tatagcaagc tcaccgtggaa caagagcagg 1920
tggcagcagg ggaacgttctt ctcatgtcc gtgtatgcgt aggctctgca caaccactac 1980
acgcagaaga gcctctccct gtctccgggt aatgtaa 2016

<210> 4
<211> 469
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy chain of CHIR-12.12 human anti-CD40 antibody

<400> 4
Met Glu Phe Gly Leu Ser Trp Val Phe Leu Val Ala Ile Leu Arg Gly
1 5 10 15
Val Gln Cys Gln Val Gln Leu Val Glu Ser Gly Gly Val Val Gln
20 25 30
Pro Gly Arg Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
35 40 45
Ser Ser Tyr Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
50 55 60
Glu Trp Val Ala Val Ile Ser Tyr Glu Glu Ser Asn Arg Tyr His Ala
65 70 75 80
Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Ile
85 90 95
Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Thr Glu Asp Thr Ala Val
100 105 110
Tyr Tyr Cys Ala Arg Asp Gly Gly Ile Ala Ala Pro Gly Pro Asp Tyr
115 120 125
Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys Gly
130 135 140
Pro Ser Val Phe Pro Leu Ala Pro Ala Ser Lys Ser Thr Ser Gly Gly
145 150 155 160
Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val
165 170 175
Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe
180 185 190
Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val
195 200 205
Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val
210 215 220
Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Pro Lys
225 230 235 240
Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu
245 250 255
Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr
260 265 270
Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
275 280 285
Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val
290 295 300
Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser
305 310 315 320
Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu
325 330 335
Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala
340 345 350
Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro
355 360 365
Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln
370 375 380
Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala
385 390 395 400
Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr
405 410 415
Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu
420 425 430
Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser
435 440 445
Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser
450 455 460
Leu Ser Pro Gly Lys
465

<210> 5
<211> 469

<212> PRT

<213> Artificial Sequence

<220>

<223> Heavy chain of variant of CHIR-12.12 human
anti-CD40 antibody

<400> 5

Met Glu Phe Gly Leu Ser Trp Val Phe Leu Val Ala Ile Leu Arg Gly
 1 5 10 15
 Val Gln Cys Gln Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Gln
 20 25 30
 Pro Gly Arg Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
 35 40 45
 Ser Ser Tyr Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
 50 55 60
 Glu Trp Val Ala Val Ile Ser Tyr Glu Glu Ser Asn Arg Tyr His Ala
 65 70 75 80
 Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Ile
 85 90 95
 Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Thr Glu Asp Thr Ala Val
 100 105 110
 Tyr Tyr Cys Ala Arg Asp Gly Gly Ile Ala Ala Pro Gly Pro Asp Tyr
 115 120 125
 Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys Gly
 130 135 140
 Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly
 145 150 155 160
 Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val
 165 170 175
 Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe
 180 185 190
 Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val
 195 200 205
 Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val
 210 215 220
 Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Pro Lys
 225 230 235 240
 Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu
 245 250 255
 Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr
 260 265 270
 Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
 275 280 285
 Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val
 290 295 300
 Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser
 305 310 315 320
 Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu
 325 330 335
 Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala
 340 345 350
 Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro
 355 360 365
 Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln
 370 375 380
 Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala
 385 390 395 400
 Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr
 405 410 415
 Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu
 420 425 430
 Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser
 435 440 445
 Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser

450
 Leu Ser Pro Gly Lys
 465

455

460

<210> 6
 <211> 239
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Light chain of CHIR-5.9 human anti-CD40 antibody

<400> 6
 Met Ala Leu Leu Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro
 1 5 10 15
 Gly Ser Ser Gly Ala Ile Val Met Thr Gln Pro Pro Leu Ser Ser Pro
 20 25 30
 Val Thr Leu Gly Gln Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser
 35 40 45
 Leu Val His Ser Asp Gly Asn Thr Tyr Leu Asn Trp Leu Gln Gln Arg
 50 55 60
 Pro Gly Gln Pro Pro Arg Leu Leu Ile Tyr Lys Phe Phe Arg Arg Leu
 65 70 75 80
 Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ala Gly Thr Asp Phe
 85 90 95
 Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr
 100 105 110
 Cys Met Gln Val Thr Gln Phe Pro His Thr Phe Gly Gln Gly Thr Arg
 115 120 125
 Leu Glu Ile Lys Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro
 130 135 140
 Pro Ser Asp Glu Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu
 145 150 155 160
 Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp
 165 170 175
 Asn Ala Leu Gln Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp
 180 185 190
 Ser Lys Asp Ser Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys
 195 200 205
 Ala Asp Tyr Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln
 210 215 220
 Gly Leu Ser Ser Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
 225 230 235

<210> 7
 <211> 474
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Heavy chain of CHIR-5.9 human anti-CD40 antibody

<400> 7
 Met Gly Ser Thr Ala Ile Leu Ala Leu Leu Leu Ala Val Leu Gln Gly
 1 5 10 15
 Val Cys Ala Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
 20 25 30
 Pro Gly Glu Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Ser Phe
 35 40 45
 Thr Ser Tyr Trp Ile Gly Trp Val Arg Gln Met Pro Gly Lys Gly Leu
 50 55 60
 Glu Trp Met Gly Ile Ile Tyr Pro Gly Asp Ser Asp Thr Arg Tyr Ser
 65 70 75 80
 Pro Ser Phe Gln Gly Gln Val Thr Ile Ser Ala Asp Lys Ser Ile Ser

85	90	95
Thr Ala Tyr Leu Gln Trp Ser Ser Leu	Lys Ala Ser Asp	Thr Ala Met
100	105	110
Tyr Tyr Cys Ala Arg Gly Thr Ala Ala Gly Arg Asp	Tyr Tyr Tyr Tyr	
115	120	125
Tyr Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val	Thr Val Ser Ser	
130	135	140
Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Ala Ser Lys		
145	150	155
Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr		
165	170	175
Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser		
180	185	190
Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser		
195	200	205
Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr		
210	215	220
Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys		
225	230	235
Arg Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys		
245	250	255
Pro Ala Pro Glu Leu Leu Gly Pro Ser Val Phe Leu Phe Pro Pro		
260	265	270
Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys		
275	280	285
Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp		
290	295	300
Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu		
305	310	315
Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu		
325	330	335
His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn		
340	345	350
Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly		
355	360	365
Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu		
370	375	380
Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr		
385	390	395
Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn		
405	410	415
Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe		
420	425	430
Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn		
435	440	445
Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr		
450	455	460
Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys		
465	470	

<210> 8
<211> 474
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy chain of variant CHIR-5.9 human anti-CD40 antibody

<400> 8
Met Gly Ser Thr Ala Ile Leu Ala Leu Leu Leu Ala Val Leu Gln Gly
1 5 10 15
Val Cys Ala Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
20 25 30

Pro Gly Glu Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Ser Phe
 35 40 45
 Thr Ser Tyr Trp Ile Gly Trp Val Arg Gln Met Pro Gly Lys Gly Leu
 50 55 60
 Glu Trp Met Gly Ile Ile Tyr Pro Gly Asp Ser Asp Thr Arg Tyr Ser
 65 70 75 80
 Pro Ser Phe Gln Gly Gln Val Thr Ile Ser Ala Asp Lys Ser Ile Ser
 85 90 95
 Thr Ala Tyr Leu Gln Trp Ser Ser Leu Lys Ala Ser Asp Thr Ala Met
 100 105 110
 Tyr Tyr Cys Ala Arg Gly Thr Ala Ala Gly Arg Asp Tyr Tyr Tyr Tyr
 115 120 125
 Tyr Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
 130 135 140
 Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys
 145 150 155 160
 Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr
 165 170 175
 Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser
 180 185 190
 Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser
 195 200 205
 Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr
 210 215 220
 Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys
 225 230 235 240
 Arg Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys
 245 250 255
 Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro
 260 265 270
 Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys
 275 280 285
 Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp
 290 295 300
 Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu
 305 310 315 320
 Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu
 325 330 335
 His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn
 340 345 350
 Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly
 355 360 365
 Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu
 370 375 380
 Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr
 385 390 395 400
 Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn
 405 410 415
 Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe
 420 425 430
 Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn
 435 440 445
 Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr
 450 455 460
 Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
 465 470

<210> 9
 <211> 612
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (0)...(0)

<223> Coding sequence for short isoform of human CD40

<221> CDS

<222> (1)...(612)

<400> 9

atg	gtt	cgt	ctg	cct	ctg	cag	tgc	gtc	ctc	tgg	ggc	tgc	ttg	ctg	acc	48
Met	Val	Arg	Leu	Pro	Leu	Gln	Cys	Val	Leu	Trp	Gly	Cys	Leu	Leu	Thr	
1	5							10					15			

gct	gtc	cat	cca	gaa	cca	ccc	act	gca	tgc	aga	gaa	aaa	cag	tac	cta	96
Ala	Val	His	Pro	Glu	Pro	Pro	Thr	Ala	Cys	Arg	Glu	Lys	Gln	Tyr	Leu	
							20					25		30		

ata	aac	agt	cag	tgc	tgt	tct	ttg	tgc	cag	cca	gga	cag	aaa	ctg	gtg	144
Ile	Asn	Ser	Gln	Cys	Cys	Ser	Leu	Cys	Gln	Pro	Gly	Gln	Lys	Leu	Val	
							35					40		45		

agt	gac	tgc	aca	gag	ttc	act	gaa	acg	gaa	tgc	ctt	cct	tgc	ggt	gaa	192
Ser	Asp	Cys	Thr	Glu	Phe	Thr	Glu	Thr	Glu	Cys	Leu	Pro	Cys	Gly	Glu	
							50				55		60			

agc	gaa	ttc	cta	gac	acc	tgg	aac	aga	gag	aca	cac	tgc	cac	cag	cac	240
Ser	Glu	Phe	Leu	Asp	Thr	Trp	Asn	Arg	Glu	Thr	His	Cys	His	Gln	His	
							65				75		80			

aaa	tac	tgc	gac	ccc	aac	cta	ggg	ctt	cg	gtc	cag	cag	aag	ggc	acc	288
Lys	Tyr	Cys	Asp	Pro	Asn	Leu	Gly	Leu	Arg	Val	Gln	Gln	Lys	Gly	Thr	
							85				90		95			

tca	gaa	aca	gac	acc	atc	tgc	acc	tgt	gaa	gaa	ggc	tgg	cac	tgt	acg	336
Ser	Glu	Thr	Asp	Thr	Ile	Cys	Thr	Cys	Glu	Glu	Gly	Trp	His	Cys	Thr	
							100				105		110			

agt	gag	gcc	tgt	gag	agc	tgt	gtc	ctg	cac	cgc	tca	tgc	tgc	ccc	ggc	384
Ser	Glu	Ala	Cys	Glu	Ser	Cys	Val	Leu	His	Arg	Ser	Cys	Ser	Pro	Gly	
							115				120		125			

ttt	ggg	gtc	aag	cag	att	gct	aca	ggg	gtt	tct	gat	acc	atc	tgc	gag	432
Phe	Gly	Val	Lys	Gln	Ile	Ala	Thr	Gly	Val	Ser	Asp	Thr	Ile	Cys	Glu	
							130				135		140			

ccc	tgc	cca	gtc	ggc	ttc	tcc	aat	gtg	tca	tct	gct	ttc	gaa	aaa	480
Pro	Cys	Pro	Val	Gly	Phe	Phe	Ser	Asn	Val	Ser	Ser	Ala	Phe	Lys	
							145				155		160		

tgt	cac	cct	tgg	aca	agg	tcc	cca	gga	tgc	gct	gag	agc	cct	ggt	ggt	528
Cys	His	Pro	Trp	Thr	Arg	Ser	Pro	Gly	Ser	Ala	Glu	Ser	Pro	Gly	Gly	
							165				170		175			

gat	ccc	cat	cat	ctt	cg	gat	cct	gtt	tgc	cat	cct	ctt	ggt	gct	ggt	576
Asp	Pro	His	His	Leu	Arg	Asp	Pro	Val	Cys	His	Pro	Leu	Gly	Ala	Gly	
							180				185		190			

ctt	tat	caa	aaa	ggt	ggc	caa	gaa	gcc	aac	caa	taa					612
Leu	Tyr	Gln	Lys	Gly	Gly	Gln	Glu	Ala	Asn	Gln	*					
							195				200					

<210> 10

<211> 203

<212> PRT

<213> Homo sapiens

<400> 10

Met Val Arg Leu Pro Leu Gln Cys Val Leu Trp Gly Cys Leu Leu Thr

<210> 11
<211> 834
<212> DNA
<213> *Homo sapiens*

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<220>
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<222> (0)...(0)
<223> Coding sequence for long isoform of human CD40
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<221> CDS
<222> (1) . . . (834)

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atg gtt cgt ctg cct ctg cag tgc gtc ctc tgg ggc tgc ttg ctg acc 48
Met Val Arg Leu Pro Leu Gln Cys Val Leu Trp Gly Cys Leu Leu Thr
1 5 10 15

gct gtc cat cca gaa cca ccc act gca tgc aga gaa aaa cag tac cta 96
 Ala Val His Pro Glu Pro Pro Thr Ala Cys Arg Glu Lys Gln Tyr Leu
 20 25 30

ata aac agt cag tgc tgt tct ttg tgc cag cca gga cag aaa ctg gtg	144	
Ile Asn Ser Gln Cys Cys Ser Leu Cys Gln Pro Gly Gln Lys Leu Val		
35	40	45

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agt gac tgc aca gag ttc act gaa acg gaa tgc ctt cct tgc ggt gaa 192
Ser Asp Cys Thr Glu Phe Thr Glu Thr Glu Cys Leu Pro Cys Gly Glu
      50          55          60

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agc gaa ttc cta gac acc tgg aac aga gag aca cac tgc cac cag cac 240
 Ser Glu Phe Leu Asp Thr Trp Asn Arg Glu Thr His Cys His Gln His
 65 70 75 80

aaa tac tgc gac ccc aac cta ggg ctt cg_g gtc cag cag aag ggc acc 288
 Lys Tyr Cys Asp Pro Asn Leu Gly Leu Arg Val Gln Gln Lys Gly Thr
 85 90 95

tca gaa aca gac acc atc tgc acc tgt gaa gaa ggc tgg cac tgt acg 336
10

Ser	Glu	Thr	Asp	Thr	Ile	Cys	Thr	Cys	Glu	Glu	Gly	Trp	His	Cys	Thr	
100							105						110			
agt gag gcc tgt gag agc tgt gtc ctg cac cgc tca tgc tcg ccc ggc															384	
Ser	Glu	Ala	Cys	Glu	Ser	Cys	Val	Leu	His	Arg	Ser	Cys	Ser	Pro	Gly	
115							120					125				
ttt ggg gtc aag cag att gct aca ggg gtt tct gat acc atc tgc gag															432	
Phe	Gly	Val	Lys	Gln	Ile	Ala	Thr	Gly	Val	Ser	Asp	Thr	Ile	Cys	Glu	
130							135				140					
ccc tgc cca gtc ggc ttc ttc tcc aat gtg tca tct gct ttc gaa aaa															480	
Pro	Cys	Pro	Val	Gly	Phe	Phe	Ser	Asn	Val	Ser	Ser	Ala	Phe	Glu	Lys	
145							150			155			160			
tgt cac cct tgg aca agc tgt gag acc aaa gac ctg gtt gtg caa cag															528	
Cys	His	Pro	Trp	Thr	Ser	Cys	Glu	Thr	Lys	Asp	Leu	Val	Val	Gln	Gln	
165							170				175					
gca ggc aca aac aag act gat gtt gtc tgt ggt ccc cag gat cgg ctg															576	
Ala	Gly	Thr	Asn	Lys	Thr	Asp	Val	Val	Cys	Gly	Pro	Gln	Asp	Arg	Leu	
180							185				190					
aga gcc ctg gtg gtc atc ccc atc atc ttc ggg atc ctg ttt gcc atc															624	
Arg	Ala	Leu	Val	Val	Ile	Pro	Ile	Ile	Phe	Gly	Ile	Leu	Phe	Ala	Ile	
195							200				205					
ctc ttg gtg ctg gtc ttt atc aaa aag gtg gcc aag aag cca acc aat															672	
Leu	Leu	Val	Leu	Val	Phe	Ile	Ile	Lys	Lys	Val	Ala	Lys	Lys	Pro	Thr	Asn
210							215				220					
aag gcc ccc cac ccc aag cag gaa ccc cag gag atc aat ttt ccc gac															720	
Lys	Ala	Pro	His	Pro	Lys	Gln	Glu	Pro	Gln	Glu	Ile	Asn	Phe	Pro	Asp	
225							230				235			240		
gat ctt cct ggc tcc aac act gct gct cca gtg cag gag act tta cat															768	
Asp	Leu	Pro	Gly	Ser	Asn	Thr	Ala	Ala	Pro	Val	Gln	Glu	Thr	Leu	His	
245							250				255					
gga tgc caa ccg gtc acc cag gag gat ggc aaa gag agt cgc atc tca															816	
Gly	Cys	Gln	Pro	Val	Thr	Gln	Glu	Asp	Gly	Lys	Glu	Ser	Arg	Ile	Ser	
260							265					270				
gtg cag gag aga cag tga															834	
Val	Gln	Glu	Arg	Gln	*											
275																

<210> 12
<211> 277
<212> PRT
<213> Homo sapiens

<400> 12
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Ala Val His Pro Glu Pro Pro Thr Ala Cys Arg Glu Lys Gln Tyr Leu
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Ile Asn Ser Gln Cys Cys Ser Leu Cys Gln Pro Gly Gln Lys Leu Val
35 40 45
Ser Asp Cys Thr Glu Phe Thr Glu Thr Glu Cys Leu Pro Cys Gly Glu
50 55 60
Ser Glu Phe Leu Asp Thr Trp Asn Arg Glu Thr His Cys His Gln His
65 70 75 80
Lys Tyr Cys Asp Pro Asn Leu Gly Leu Arg Val Gln Gln Lys Gly Thr
85 90 95

Ser Glu Thr Asp Thr Ile Cys Thr Cys Glu Glu Gly Trp His Cys Thr
 100 105 110
 Ser Glu Ala Cys Glu Ser Cys Val Leu His Arg Ser Cys Ser Pro Gly
 115 120 125
 Phe Gly Val Lys Gln Ile Ala Thr Gly Val Ser Asp Thr Ile Cys Glu
 130 135 140
 Pro Cys Pro Val Gly Phe Phe Ser Asn Val Ser Ser Ala Phe Glu Lys
 145 150 155 160
 Cys His Pro Trp Thr Ser Cys Glu Thr Lys Asp Leu Val Val Gln Gln
 165 170 175
 Ala Gly Thr Asn Lys Thr Asp Val Val Cys Gly Pro Gln Asp Arg Leu
 180 185 190
 Arg Ala Leu Val Val Ile Pro Ile Ile Phe Gly Ile Leu Phe Ala Ile
 195 200 205
 Leu Leu Val Leu Val Phe Ile Lys Lys Val Ala Lys Lys Pro Thr Asn
 210 215 220
 Lys Ala Pro His Pro Lys Gln Glu Pro Gln Glu Ile Asn Phe Pro Asp
 225 230 235 240
 Asp Leu Pro Gly Ser Asn Thr Ala Ala Pro Val Gln Glu Thr Leu His
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 Gly Cys Gln Pro Val Thr Gln Glu Asp Gly Lys Glu Ser Arg Ile Ser
 260 265 270
 Val Gln Glu Arg Gln
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<210> 13
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 <213> Homo sapiens

<220>
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 <223> Human IL-2 precursor

<221> CDS
 <222> (1)...(459)

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 Met Tyr Arg Met Gln Leu Leu Ser Cys Ile Ala Leu Ser Leu Ala Leu
 1 5 10 15

gtc gca aac agt gca cct act tca agt tct aca aag aaa aca cag cta 96
 Val Ala Asn Ser Ala Pro Thr Ser Ser Thr Lys Lys Thr Gln Leu
 20 25 30

caa ctg gag cat tta ctg ctg gat tta cag atg att ttg aat gga att 144
 Gln Leu Glu His Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile
 35 40 45

aat aat tac aag aat ccc aaa ctc acc agg atg ctc aca ttt aag ttt 192
 Asn Asn Tyr Lys Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe
 50 55 60

tac atg ccc aag aag gcc aca gaa ctg aaa cat ctt cag tgt cta gaa 240
 Tyr Met Pro Lys Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu
 65 70 75 80

gaa gaa ctc aaa cct ctg gag gaa gtg cta aat tta gct caa agc aaa 288
 Glu Glu Leu Lys Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys
 85 90 95

aac ttt cac tta aga ccc agg gac tta atc agc aat atc aac gta ata 336
 Asn Phe His Leu Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile

100

105

110

gtt ctg gaa cta aag gga tct gaa aca aca ttc atg tgt gaa tat gct 384
 Val Leu Glu Leu Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala
 115 120 125

gat gag aca gca acc att gta gaa ttt ctg aac aga tgg att acc ttt 432
 Asp Glu Thr Ala Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe
 130 135 140

tgt cag agc atc atc tca aca ctg act 459
 Cys Gln Ser Ile Ile Ser Thr Leu Thr
 145 150

<210> 14
<211> 153
<212> PRT
<213> Homo sapiens

<400> 14
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 1 5 10 15
 Val Ala Asn Ser Ala Pro Thr Ser Ser Thr Lys Lys Thr Gln Leu
 20 25 30
 Gln Leu Glu His Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile
 35 40 45
 Asn Asn Tyr Lys Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe
 50 55 60
 Tyr Met Pro Lys Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu
 65 70 75 80
 Glu Glu Leu Lys Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys
 85 90 95
 Asn Phe His Leu Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile
 100 105 110
 Val Leu Glu Leu Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala
 115 120 125
 Asp Glu Thr Ala Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe
 130 135 140
 Cys Gln Ser Ile Ile Ser Thr Leu Thr
 145 150

<210> 15
<211> 399
<212> DNA
<213> Homo sapiens

<220>
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<222> (0)...(0)
<223> Mature human IL-2

<221> CDS
<222> (1)...(399)

<400> 15
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 Ala Pro Thr Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

tta ctg ctg gat tta cag atg att ttg aat gga att aat aat tac aag 96
 Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

aat ccc aaa ctc acc agg atg ctc aca ttt aag ttt tac atg ccc aag 144

<pre> Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys 35 40 45 aag gcc aca gaa ctg aaa cat ctt cag tgt cta gaa gaa gaa ctc aaa 192 Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Leu Lys 50 55 60 cct ctg gag gaa gtg cta aat tta gct caa agc aaa aac ttt cac tta 240 Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu 65 70 75 80 aga ccc agg gac tta atc agc aat atc aac gta ata gtt ctg gaa cta 288 Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu 85 90 95 aag gga tct gaa aca aca ttc atg tgt gaa tat gct gat gag aca gca 336 Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala 100 105 110 acc att gta gaa ttt ctg aac aga tgg att acc ttt tgt cag agc atc 384 Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Cys Gln Ser Ile 115 120 125 atc tca aca ctg act Ile Ser Thr Leu Thr 130 </pre> <p><210> 16 <211> 133 <212> PRT <213> Homo sapiens</p> <p><400> 16 Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His 1 5 10 15 Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys 20 25 30 Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys 35 40 45 Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Leu Lys 50 55 60 Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu 65 70 75 80 Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu 85 90 95 Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala 100 105 110 Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Cys Gln Ser Ile 115 120 125 Ile Ser Thr Leu Thr 130</p> <p><210> 17 <211> 396 <212> DNA <213> Artificial Sequence</p> <p><220> <223> des-alanyl 1, C125S human IL-2 mutein</p> <p><221> CDS <222> (1) . . . (396)</p> <p><400> 17</p>	<pre> 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 </pre>
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cct act tca agt tct aca aag aaa aca cag cta caa ctg gag cat tta	48
Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His Leu	
1 5 10 15	
ctg ctg gat tta cag atg att ttg aat gga att aat aat tac aag aat	96
Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys Asn	
20 25 30	
ccc aaa ctc acc agg atg ctc aca ttt aag ttt tac atg ccc aag aag	144
pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys Lys	
35 40 45	
gcc aca gaa ctg aaa cat ctt cag tgt cta gaa gaa gaa ctc aaa cct	192
Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Leu Lys Pro	
50 55 60	
ctg gag gaa gtg cta aat tta gct caa agc aaa aac ttt cac tta aga	240
Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu Arg	
65 70 75 80	
ccc agg gac tta atc agc aat atc aac gta ata gtt ctg gaa cta aag	288
Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys	
85 90 95	
gga tct gaa aca aca ttc atg tgt gaa tat gct gat gag aca gca acc	336
Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr	
100 105 110	
att gta gaa ttt ctg aac aga tgg att acc ttt tct cag agc atc atc	384
Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile	
115 120 125	
tca aca ctg act	396
Ser Thr Leu Thr	
130	
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20 25 30	
Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys Lys	
35 40 45	
Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Leu Lys Pro	
50 55 60	
Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu Arg	
65 70 75 80	
Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys	
85 90 95	
Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr	
100 105 110	
Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile	
115 120 125	
Ser Thr Leu Thr	
130	